DOCUMENT RESUME

ED 109 163 TM 004 610

AUTHOR Ironside, Roderick A.; Richardson, Adele
TITLE The Dimensions and Specific Indicators Used to Define Competence and Quality in Medical Care: A Review of the Literature.
INSTITUTION Educational Testing Service, Princeton, N.J.
SPONS AGENCY Puerto Rico Univ., San Juan. School of Medicine.
REPORT NO ETS-PR-73-23
PUB DATE Sep 73
NOTE 46p.; For related document, see TM 004 611

EDRS PRICE MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS Community Health Services; *Evaluation Criteria; Health Personnel; Hospitals; *Literature Reviews; *Medical Services; Medical Treatment; Patients (Persons); *Physicians; *Standards
IDENTIFIERS *Puerto Rico

ABSTRACT

This literature review has been prepared as one aid in the process of outlining indicators of minimally acceptable performance of practicing licensed physicians in the service of the Department of Health in Puerto Rico as part of the University of Puerto Rico's Special Curso de Perfeccionamiento, a course that was developed for unlicensed graduates of foreign medical schools. The purpose of the review is to present background material as a summary report concerning the definition of performance standards. Greatest attention has been paid, of course, to such standards as set for physicians in hospital and/or office practice, but a few references related to nurses have been included as relevant to the problem. With respect to indicators of acceptable performance, the intent of the review was twofold: to discover (a) specific criteria which have been proposed as performance standards, no matter in what various forms, and (b) procedures which have been employed in determining such criteria. At the same time, it was possible to note certain philosophical viewpoints concerning the whole question, and also to relate measurement techniques to the criteria as outlined. The emphasis, however, was on the criteria and the means used for arriving at them. (Author/DEP)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED109163

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PR - 73 - 23

The Dimensions and Specific Indicators Used To Define Competence and Quality in Medical Care: A Review of the Literature

Roderick A. Ironside
Adele Richardson

September 1973

EDUCATIONAL TESTING SERVICE
PRINCETON, NEW JERSEY

THE DIMENSIONS AND SPECIFIC INDICATORS USED TO DEFINE COMPETENCE AND QUALITY IN MEDICAL CARE:

A REVIEW OF THE LITERATURE

Preface

This review of the literature was undertaken in order to provide a "background and working paper" on the companion topics of the delineation and measurement of criteria describing an acceptable level of general medical practice. As part of the University of Puerto Rico's special Curso de Perfeccionamiento (developed for unlicensed graduates of foreign medical schools), the Medical School convened a committee widely representative of the various professional medical groups in Puerto Rico, and charged them with the initial task of defining high-quality performance. The group chose to restrict consideration to general practice as required in the Island's local Health Centers (Centros de Saludes), and thus dealt with three major areas: hospital care, ambulatory care, and public and community health. The ultimate purpose of that effort was the assessment of the quality of care provided in the field by those Curso graduates who later approved the state licensure examinations and were assigned to the Health Centers.

The conference took place in December 1970, and its products were employed in a variety of ways. As might perhaps be expected, more attention was given to the specification of performance criteria than to the development of measures. Moreover--as again might be expected in view of the literature review findings--the conferees came face to face with a problem encountered by many others engaged in the same sort of endeavor: it was more difficult to define performance in behavioral terms than to outline the wide range of topics which must be dealt with.

The careful and embracing sets of criteria thus delineated--and the qualifications pertaining to them--are the subject of a separate report (ETS Project Report 73-24). The same is true of several other evaluative activities undertaken by the Curso staff of the Medical School (and subcontracted to ETS). The present report concerns only the review of the literature which was used, along with other documents, as background for the conference deliberations. It served as a methodology guide with respect to both the statement and measurement of quality performance indicators.

This review is in essentially the form in which it appeared in 1970. However, certain additional references have been utilized and the text has been reorganized somewhat, in order to put the study into final form as a project report. The review, completed within a 1½ month period, was prepared as an adjunct to other ETS services and was not a contracted activity.

This review was prepared for a Conference conducted by the University of Puerto Rico Medical School, in connection with the evaluation of its special Curso de Perfeccionamiento for foreign medical graduates.

Originally prepared in 1970 Revised in 1972

THE DIMENSIONS AND SPECIFIC INDICATORS USED TO DEFINE COMPETENCE AND QUALITY IN MEDICAL CARE: A REVIEW OF THE LITERATURE

INTRODUCTION AND BACKGROUND

This literature review has been prepared as one aid in the process of outlining indicators of minimally acceptable performance of practicing licensed physicians in the service of the Department of Health in Puerto Rico. The purpose of the review is to present background material as a summary report concerning the definition of performance standards. Greatest attention has been paid, of course, to such standards as set for physicians in hospital and/or office practice, but a few references related to nurses have been included as relevant to the problem.

It should be noted that the literature in English has been examined and thus virtually all sources refer to practices, researches, and proposals in the mainland United States. Several references, however, were found which dealt with medical practice in Puerto Rico, and these were valuable in two primary ways: they provided some background on the medical care system on the Island, and they made reference to the particular medical needs and most serious conditions peculiar to Puerto Rico. Of particular value was the 1962 resource report Medical and Hospital Care in Puerto Rico (88), which was later updated by Arbona (4) in the monograph "A Progress Report on Regionalization of Comprehensive Health Services in Puerto Rico." Another important resource was Cordero (23), where an evaluation of outpatient services in rural health centers was reported in 1964. An article by Seipp (112) also proved helpful in providing a sense of the medical needs and opportunities in Puerto Rico.

With respect to indicators of acceptable performance, the intent of the review was twofold: to discover (a) specific criteria which have been proposed as performance standards, no matter in what various forms, and (b) procedures which have been employed in determining such criteria. At the same time, it was possible to note certain philosophical viewpoints concerning the whole question, and also to relate measurement techniques to the criteria as outlined. The emphasis, however, was on the criteria and the means used for arriving at them.

One conclusion was arrived at early. And that is that a great deal has been written about the appraisal of medical care. Hundreds of articles and studies have been published in the last fifteen years bearing in some way on this broad subject. (The fact that this review is based on only a small proportion of these indicates first, that a thoroughgoing summary would be a monumental task and second, that an attempt was made to consult only references and annotations that appeared to relate directly to performance criteria.)

It may be noted, too, that attention has been given to the subject of assessment in fairly precise terms by a broad spectrum of persons and groups: medical schools, the AAMC, the APHA, the AMA, public health schools and departments, and a host of individuals representing hospitals, private practice, and a variety of disciplines as well as several of the professional organizations such as the American Academy of Pediatrics. The AMA's Committee on Community Health Care, for example, has made available a kit of 11 articles (some of which are referred to in this review) which represent a spectrum of approaches and concepts in the field. The kit is introduced by the statement that there is an "increasing interest in systematic methods for evaluating the quality of medical care provided in physicians' private offices and hospitals." Similarly, the AMA has editorialized (JAMA, August 2, 1965) in favor of attempts to assess quality of practice by individual physicians. The literature refers repeatedly to the work of Peterson (96), Kroeger (75), Daily and Morehead (29), and Clute (19) because of their methodologies and because of their emphasis on the office practice of individual generalists and specialists.

Again, the "Committee on Quality of Patient Care" of the Oregon Medical Society, as reported in 1963, sought to both stimulate and assist individual physicians in evaluating and improving patient care.

As another illustration of the general concern with performance and quality care, in a 1970 address before the AMA Congress of Medical Education, Hess (60) saw a direct relationship between the many current changes in medical education and the ultimate development of performance criteria as the best means of determining readiness to practice and quality of practice

once engaged in. In other words, while some see such criteria as a means of discovering malpractice or "punishing" the unworthy, Hess views them as a positive force in better education and practice. (Hess, Price, and others also predict the deemphasis of grades and amount of training as predictors of future competence in favor of direct performance, demonstrated clinical skill, good communication with patients, and efficiency.)

Finally, it may be pertinent to remark that in 1970 the then National Center for Health Services Research and Development of the Public Health Service was supporting several projects all of which included quality of medical care among their major purposes. Besides the special training-evaluation curso in Puerto Rico, there were: a) a study conducted by the American Society of Internal Medicine, concerned with quality performance in office practice; b) a project in Hawaii aimed at assessing quality medical care in ambulatory settings in those islands; c) a grant to the School of Public Health in North Carolina which included study of health care delivered, patient satisfaction, and efficiency and effectiveness of delivery systems; d) a contract with the American College of Physicians for evaluating the quality of medical care in hospitals. It was possible to include a few products of these contracts in the literature study.

One may conclude that many are concerned with the delivery of quality care in all sorts of settings. They share a challenge as well as a concern, however, in that they must struggle with the definition of what particular performance or set of conditions or collection of practices they will deem as acceptable. They must all define the practice they are aiming at in terms of useful and manageable criteria.

SOURCES EMPLOYED

A wide range of sources was consulted in an effort to locate those references which would bear most directly on the establishment of criteria and the procedures involved. As indicated in item 7 below, journals were searched as a cross-check against other sources; in the main, this was done for the years 1960-1970. However, during the revision of the review, a number of additional references were found representing publication in late 1970 and 1971.

1. Methodology in Evaluating the Quality of Medical Care: An Annotated Bibliography, 1955-1968 (by Altman, Anderson, and Barker; University of Pittsburgh Press, 1969), with 397 references. The section on "Elements of Performance: Audit, Review, and Evaluation" (124 titles) was carefully read for material related to the delineation of criteria of adequate medical care.

2. MEDLARS, the computer-service cataloging Index Medicus entries. MEDLARS picked up over 200 titles; relatively few of them were of direct use in this search, however. MEDLARS indexes only from 1968.

3. "Evaluation of the Quality of Medical Care," a bibliography produced by Jean Rochon in 1968, with approximately 90 references.

4. "AMA Kit of Articles on Medical Care Appraisal," listing 11 references, many of which appeared also in other sources.

5. "References to Studies in Medical Education," bibliography prepared by University of Illinois School of Medicine.

6. Many articles and studies themselves had bibliographies which were used where appropriate. Several individuals also provided useful leads.

7. Finally, as a cross-check against other sources, the index volumes of the following journals were examined: The American Journal of Public Health, The New England Journal of Medicine, The Journal of Medical Education, Lancet, and the Milbank Memorial Fund Quarterly.

LIMITATIONS OF THE LITERATURE

It is especially important to note several limitations in the literature which affect the number of relevant references available, and also the degree of their usefulness for the present purpose. In a sense, this section constitutes a set of conclusions about the nature of the literature itself, but this is of course done in the context of the immediate need for specific guidance in criterion-development for medical practice in the local Health Centers. It should not be inferred that the literature is similarly limited for other purposes.

1. Few references treated "quality performance" in terms of the practice of the individual physician. Most sources dealt with the overall quality care provided by a hospital or a total health care system. And in some of these cases, quality of care referred to facilities,

maintenance, and organization; in other cases, of course, patient management was the major concern.

2. Emphasizing the disparity in definitions of "quality care," several sources discussed such matters as physician supply, use of paraprofessionals, cost, time, physician personality, and nature of training. These were treated as indicators of quality care, not just predictors, and reflect some of the specifics involved in the accrediting of hospitals, for example.

3. Several studies, initially appearing to be relevant, turned out to be more useful in medical education and training than in delineation of on-the-job performance expectations--though of course the two areas are closely related.

4. A large number of studies and discussions were concerned with only one medical topic (e.g., pediatrics, heart sounds, surgery, cancer detection) or with only one medical practice (e.g., patient-interviews, records, referrals). This of course makes the experimenter's task an easier one, but it also makes it obvious that a much more difficult job is involved in trying to set forth, and measure for, the competence criteria affecting a physician's whole range of practice.

5. Many references turned out to be discussions of the need for clearly defined criteria rather than reports of frontal attacks on the problem itself.

6. In only a few cases were criteria specified at a level where one could assess actual performance. For example, many called for an "adequate physical examination" but it is of course difficult to precisely indicate what constitutes adequacy in a way that could be generalized. (Where the concern is pediatrics, say, then particular elements of the typical examination are indicated and can be specified).

7. Different "kinds" of criteria emerged as well as varying concepts of the nature of quality performance. While this may be useful in con-

sidering several different aspects of performance, it can also be viewed as a limitation: lack of clear definition in the literature forces one to develop his own definition. In some cases the criteria concerned a physician's personality, his life-style; in other cases, criteria were included only if they could be judged by one particular method (through study of records, for example). In still other papers, certain aspects of performance were weighted more heavily than others in defining desirable performance in a certain type of practice. Again, some investigators limited their criteria to direct medical treatment, while others included all the parameters of patient management or medical practice.

8. There appear to be many opportunities, through the literature, to consider a wide range of dimensions of total physician activity, but by comparison, there are few discrete criteria by which such dimensions may conveniently be defined.

9. With but two or three exceptions, the literature did not deal with situations which might be comparable to the more isolated local health centers in Puerto Rico.

DIMENSIONS OF THE PHYSICIAN'S ROLE

Few writers used the term "dimension" but it became obvious through the literature search that many individuals were concerned with different aspects of the physician's role--whether in hospital, clinic, or private practice. And "role" came to mean more than tasks done directly for diagnosis or therapy. When one looks at the totality of the literature--in search of specific criteria of quality performance--he finds that these criteria relate to several disparate dimensions. No one writer dealt with all of these in a studied, coherent fashion. What is outlined below is an attempt to indicate the range of concerns among those who deal with the question of quality medical care in a variety of settings.

Norman Stearns, MD, in remarks prepared for the AAMC meetings in Los Angeles (October, 1970) discussed quality of medical care in terms of attitude, the physician's attitude. "This is not a knowledge problem," he said, "but one of attitude." His point was that a good deal of concern and commit-

ment must be generated by medical people in order to accomplish improvement in care in areas of importance: defining community needs and responding to them, daily patient care, preventive medicine, and community health. Physicians, he feels, must be prepared to assess themselves, willing to seek consultations, ready to talk with all concerned about quality care. His remarks served to emphasize one dimension of the physician's role which emerged from the review (52, 59, 64, 72, 100, 116, 121, 130): attitudes and communication. Various investigators have studied the attitudes of interns and physicians in such diverse topics as these:

-motivation to do a high quality job
-concern for public health and invididual patient health
-willingness to work overtime as evidence of such concern
-attitudes toward patients in handling premarital conferences and enuresis cases, for example
-giving emotional support to patients
-working for the improvement of the quality of life
-developing relationships with and concern for complete families
-interviewing patients in a warm, supportive manner
-communicating with patients in their language (nontechnical)
-physician's definition or feelings about his role as doctor

Presumably it is true that any person, no matter what his job, should possess positive attitudes about the requirements of his work and the people he deals with. The literature as a whole, however, does not appear to accept this notion as a given, but rather deals with it in the fairly specific terms outlined above. One study (59) focused on the evaluation of skill in relating to patients and conducting interviews, for example. Another (130), premising that physician attitudes are not only relevant in patient care but also may be therapeutic, analyzed general practitioners' attitudes toward themselves, their patients, their colleagues, and their positions; the physicians' perceptions of their total role was contrasted with their attitudes as expressed during structured interviews. A third study (121) investigated the effects of verbal interaction (between patient and doctor) on patient-satisfaction and medical follow-through by the patients, while two others (64 and 100) explored patient-doctor communication in terms of language used, content involved, and thoroughness.

In addition, it was noted that 80 specific qualities (not exactly translatable into performance criteria) were employed in a series of studies by Price and Taylor (101, 102, and 118) as "marks of excellence." The following were included among the first 30 of the 80 items, which had been ordered in importance:

> inspires confidence in his patients
> is wise, honest, forthright, enthusiastic, dedicated
> is aware of emotional factors in dealing with patients
> has sustained general interest and concern for patients
> has good doctor-patient relationships
> is able to communicate well

A number of other papers included various criteria which fall under this rubric of Attitude and Communication; they will be noted later when full sets of criteria are discussed.

As far as the search is concerned, no other aspects of quality care were studied or discussed directly as the subject of an article--except of course clinical competence, which will be dealt with separately in the following section. However, several such dimensions emerged in conjunction with other criteria--either as suggested concerns or as agreed-upon elements necessary in the provision of total health care. One notable statement about such dimensions appears in Morehead's report (91) of audits conducted in OEO neighborhood health centers:

> "The focus of the audits is on the medical care process itself as it affects individual patients. Selected charts are reviewed... Many other important areas with deep impact on quality of service, such as patient satisfaction and accessibility of service, can be considered equal in importance to the technical quality of the care provided."

Others (17, 25, 44, 101, and 118) have included patient satisfaction among the aspects of quality medical care. There is concern that patients not only be "cured" but that they be "satisfied" as well, since this is important to family health, community health, and responsiveness to efforts at education and preventive medicine. These writers, and another (129), also include the accessibility and availability of both doctors and medical services as an

attribute of high quality care. These two dimensions--patient satisfaction and accessibility--appear to be highly related from the patient point of view.

A fifth dimension is that of the evaluation of total health needs. Several writers (25, 44, 65, 118) indicate that one aspect of quality care is the determination of a patient's total condition and needs as opposed to dealing only with the presenting complaint. This dimension relates, too, to preventive medicine and to the treatment and care of whole families. It may be that "treating the whole patient" is one part of preventive medicine, but it has been dealt with separately by various writers. Preventive medicine, as yet another dimension, has been included in several sources (43, 48, 96) in addition to those already cited.

Efficiency and productivity have been referred to in three references (17, 58, 101) as another concern of quality care. The number of patients seen, the productive use of time, careful use of ancillary personnel, organization of the health center or office, and wise use of referral--these are general criteria which have been proposed as constituting efficiency and productivity.

A few other topics have also been mentioned: sanitation in the office, consultation with other medical staff, education of the public, continued self-training by the physician, and consistent patient follow-up. Each of these has appeared only once in the literature surveyed.

Three sources deserve particular attention in connection with these "dimensions" of quality care. The paper by Cowles and Kubany (25) lists seven major areas which should be included in assessing the work done by general practitioners. Each one, of course, needs to be developed into specific standards if the list is to be of much use, but the range of dimensions is notable:

knowledge of medical information
ability to gain and maintain the patient's confidence
assumption of responsibility for the patient's total problems (medical, social, emotional)
skill in observing, recording, reporting
skill in developing and verifying hypotheses from patient data
stability under different situations
integrity: honesty, recognition of one's limitations

The California Medical Association paper (17) is similar in that it outlines six areas which, when fulfilled, constitute "high quality health care." The list differs from the one just above, but has the same general range of concerns:

technical competence
availability of health resources to all
motivation to achieve high quality care
effectiveness and efficiency of performance
physician and patient satisfaction with care
up-to-date scientific knowledge

The third reference is to Peterson (98) who adopted an earlier listing of focal dimensions outlined by the British Medical Association:

continuous care of patients
health education and preventive medicine
treatment of patient as an individual
diagnosis, treatment, after-care, rehabilitation
information to specialists

These three sources emphasize a plurality of medical care aspects (or dimensions) and are unusual because they are rare in the literature. In particular, it should be noted that the clinical-competence dimension is included among others--and at face this suggests their equal weighting and importance. To be sure, the lists are different and do not encompass all the individual dimensions which emerged from the review (as discussed above).

CLINICAL COMPETENCE AND PATIENT-MANAGEMENT AS A DIMENSION

The largest number of sources were concerned with the technical management of illness. As indicated earlier, these references illustrate many differences in the approach to definition of quality care. They differ in the degree of specificity of the criteria arrived at; they differ in the number and kinds of activities considered; they differ in emphasis; they differ in applicability to given new situations; they differ in the degree to which they are discursive as opposed to empirical studies; they differ also in their fundamental concerns. Some deal with a single disease or clinical approach; some with medical education; and some with the whole domain of health care.

One further general observation may be made: the criteria which a given writer develops appear to have a direct relationship to the means by which they might be tested. If an investigator begins by deciding that the study of medical records will be his procedure, then he is automatically limited in the aspects of quality care he may feasibly study. If he determines to observe physicians on the job, then he, too, is limited in the extent of the criteria he will deem as important or observable. Thus, some individuals have developed what appear to be limited sets of criteria, depending upon their purposes. This is one reason for examining a number of references, so that a wider range of possibilities may be explored.

Kroeger, et al.(75), in a brief investigation, studied the office records of internists, basing their study on items "representing the essential components of a complete record" plus additional material specifically needed to study diagnosis and treatment of particular diseases (including anemia, duodenal ulcer, osteoarthritis). A total of 80 specific items was developed and put into 11 categories: basic background, chief complaint, present illness duration and previous treatment, system review, history, family history, physical, procedures, diagnosis, treatment and results, and communications to the patient. Thus quality care was defined in groups of criteria all of which could be revealed through study of the medical and office records kept.

Huntley (67), with the premise that quality record-keeping would itself indicate the quality of care being provided by medical students, listed these criteria for an acceptable work-up: complete history and physical; routine hemogram; urinalysis; syphilis test; chest x-ray; rectal and pelvic exams; adequate plans for care; follow-up of abnormalities discovered in the physical exam. Huntley's criteria are limited to diagnostic and planning functions. Beaumont (7) went a little further by adding requirements for the referral process: Is referral information noted in the record? is the referring doctor notified early and later concerning diagnosis, prognosis, disposition? Beaumont derives a total of 13 criteria for a quality diagnosis; an interesting sidenote is that an acceptable quality of care is defined as an "adequate" record for any 12 of the 13 elements.

Turning to observation as a method, and presumably as a highly valued one, Jungfer and Last (70) conducted a study of over 100 general practitioners in Australia. Each was observed for at least a full day by a peer physician, as he proceeded through routine tasks. Clinical performance was evaluated on a 5-point scale within each of three areas: history, physical examination and treatment (with a statement that "...history-taking is the most important clinical skill of the general practitioner.") As an example of the specificity of the clinical aspects individually rated, the physical examination included the following among 23 activities...

Disrobing	Neurological
Lymph nodes	Temperature
Skin	Abdomen
Peripheral pulse	Auscultation

Each subaspect's rating was related to a prespecified verbal description of performance, from no-action-taken to thorough-investigation.

Aside from the use of observation-rating as a method and the careful delineation of clinical behaviors, Jungfer's study may be valuable in that it uncovered--and reported--a number of inadequate practices in the sample and focused attention on the educative implications of the investigation.

Morehead (92) employed the interview technique in one study along with audit of records. Individual physicians were interviewed regarding their handling of several diseases, although "no attempt was made to have specific criteria for each disease studied." However, the topics discussed in the interview included the following, and each was rated on a scale of Good-Fair-Poor (with variable weightings):

RECORDS: history, physical, progress notes, organization, justification of the tentative diagnosis

MANAGEMENT: time in obtaining indicated procedures, indicated lab work (with minimum hemoglobin, urinalysis, and serology in every case), x-ray, consultations, summary

TREATMENT AND FOLLOW-UP: therapy, follow-up lab work, adequacy of follow-up visits, overall management.

Overall judgements were arrived at (weighting records 30%, management 40%, and treatment 30%) for given physicians and given conditions, with a potential total of 100 points in each case. Prespecified statements were prepared for each subactivity. The remaining matter of note is that this study was conducted within operating groups of physicians who participated in the Health Insurance Plan; and for "those who scored 60 or less, corrective measures were recommended--either more intensive supervision...or termination..." (The mechanics of the study are necessarily oversimplified here, but it is a case where criteria were established, rated, and acted upon.)

Helfer's study (58) pertained to quality care in a pediatric emergency room, as indicated by adequacy of diagnosis, treatment, and disposition. Charts were checked for these specifics in the history: illness duration, temperature, ear pain, cough, vomiting, diarrhea, drug sensitivity. Criteria for an adequate physical exam were: ears, mouth, lymph nodes, respiration, auscultation of lungs, throat and heart, and abdomen exam. No other specifics were provided.

Other studies dealing with the audit of records were examined also. They share the limitation of some of these above in that they provide little specificity for the topics of concern outlined. Another difficulty is illustrated by the Morehead study (91), where the clinical audits for several diseases were performed by experienced clinicians who made judgements concerning such topics as "justification of diagnosis, adequate physical, indicated consultations, and acceptability of treatment." While some studies have broken such topics into more discrete elements for tabulation or verification, in this case personal judgement within broad topics was used as the basis for determining quality of care.

To a certain extent, different sets of criteria were developed in studies where observation was the method employed for getting data. For example, Bergman (10), in a study of pediatricians in private settings, set up these 7 general topics: personal approach to parents and children; components of physical exam (checklist with 49 items); time spent; frequency of given diagnostic procedures; inclusion of given items in history (38 items listed); prescriptions made; and advice given. The first and last of these are topics

which the study of records would not discover. Peterson's study (96), on the other hand, set up criteria in four areas where the records might have provided most of the needed information: diagnosis, therapy, preventive medicine, and record-keeping. Peterson and his colleagues felt, though, that direct observation would reveal many subtle aspects of practice--both positive and negative--that could not be picked up through a study of records. Checklists and written commentary were used as the basis of judgements in this study of general practitioners.

Hinz (63) assessed the clinical performance of students (for use in both teaching and evaluation) also by means of direct observation. He developed fairly specific criteria for the observation schedule--some of which depended upon the observer's judgement, while others were a matter of objective reporting of events. Although this study was restricted to the diagnostic function, the criteria are presented in some detail because of their specificity. See Appendix A.

Looking at a small segment of medical care, Bates (6) examined 130 referrals to an outpatient clinic. Five criteria were applied: chief complaint and history, physical findings, lab work results, medications, and diagnostic impressions. (Using a standard of 4 of the 5 criteria being judged satisfactory, only 23% of the referrals were deemed adequate. It is not known whether this was an academic finding only or whether clinic doctors in fact found many referrals lacking in information necessary for particular cases.)

Two sets of criteria concerning competence in nursing are included because of their specific elements. In one paper (11) the authors suggest four areas which might be noted in spot checks of quality care by nurses (related to particular illnesses): a) patient position in bed, b) condition of skin, relative to frequency of turnings, c) whether intravenous needles remain imbedded after bottles are empty, and d) state of patient's dressing. Glaser (48) provides a brief list of broad standards to be applied to the public health nurse; they amount to a general job description, but without specific performance expectations. They are:

> Gives skilled care to patients requiring part-time nursing care
> Uncovers health problems thru observation, interview, records
> Finds out the course of disease, possible complications, preventive measures needed

Establishes good relationship with patient and family
Uses records and statistics effectively

These five requirements are reportedly broken into 66 more specific functions which are expected of all public health nurses (not listed in this source). Glaser's group rated a number of nurses over an 8-week period using a 4- point scale in terms of frequency of performing the particular tasks. It was assumed, by definition, that the more often a nurse fulfills the particular aspects of that role, the better is the quality of medical care dispensed.

In a brief but emphatic paper (83), the Committee on Maternal Welfare of the Massachusetts Medical Society uniquely approached the matter of quality care criteria by outlining crucial standards which would prevent deaths related to maternity. As excerpted in Appendix D, they outlined an experience-based list of "musts," noting that "for every heading there is on record a maternal death that could have been avoided if the dictum had been observed."

Along the same lines of attending to specialty practice (as opposed to general practice), the American Society of Internal Medicine (90) has developed disease-oriented sets of criteria which set minimal standards in its "Quality Appraisal Project." Both armchair and empirical approaches have been used in these very recent outlines, one of which is included for illustrative purposes as Appendix E (diabetes). At the present time, ASIM is in the process of validating various sets of such standards and appears to have moved far along the road in establishing acceptable and measurable criteria of quality practice within a careful and thoroughly-planned development project.

The Physician's Role

Three relatively recent papers provide a somewhat more global look at the various roles of the physician. And although these 3 descriptions include different aspects of the physician's role, they help to define that role more fully. They also reinforce certain dimensions mentioned earlier, around which more specific criteria may be developed. In these respects, they are similar to the California (17) and Cowles (25) references discussed earlier.

Hubbard (65) and others developed a taxonomy of clinical performance--in 9 major areas--in their efforts to determine what needed to be tested

for in Part III of the National Board Examinations. As published, this classification gives only broad general expectations, but at the same time it covers a large number of topics. See Appendix B.

Hess (60) implies the need for "certified performance capabilities" and calls for the concomitant definition of minimum levels of competence in a physician's demonstrating the following capabilities:

medical and clinical knowledge
diagnosis of illnesses
treatment of illnesses
diagnostic and therapeutic procedures
skill in relating to patients
keeping of records
psychomotor skills

Finally, Sanazaro and Williamson (108) outline a classification scheme covering the physician's performance in internal medicine. They called on specialists to judge which "actions" are causally related to patient end-results (either beneficial or detrimental), based on actual practices known to them or engaged in by themselves. The resulting detailed list of vital actions, services, and concerns, shown in Appendix C, serves as a taxonomy for clinical performance, and breaks these down into general and specific categories.

The study by Cordero (23) is relevant from several points of view. First, it relates to medical care specifically in Puerto Rico, and secondly it concerns such care in a rural Health Center. Third, it deals with criteria for judging adequacy of care, although these are more in terms of general center management and handling of various responsibilities, than specific physician behaviors related to clinical practice. Fourth, and perhaps most importantly, the study attempts to relate performance standards on the one hand to medical needs and resources on the other.

The presumption was that a realistic quality care expectation would have to be based on knowledge of physician training, physical and financial resources, physician-patient ratios, and the like. As noted, "the concept of minimal adequate care was defined by establishing criteria of the amount of medical supervision (care) needed by particular types of patients." Thus,

for some patients and conditions the keeping of records is not requisite; similarly, quality may be inferred where physicians appropriately use the referral system--or conversely use their own facilities and skills before or instead of referring. The stance was not defensive, however. Cordero studied the case needs (and physician handling) of 250 patients, and using minimal criteria found about 50% of the cases revealing some degree of poor medical practice, notably in terms of omissions: treatment possible but not given; inadequate physical examinations; diagnosis needed and possible, but not made--and thus no treatment; needed referrals to district hospital not made. Another finding was that--because of the circumstances--physicians saw and treated generally the most serious cases with the result that the preventive medicine thus ignored tended to increase the number of later serious cases in a never-ending cycle.

CONCLUSION

Certain major problems were encountered in attempting to draw from the literature a coherent picture of current criteria of adequate (or minimal) medical care. The first was expected--namely, that relatively few criteria would be specific enough to stand by themselves as indicators of precise performance. It is never an easy job to prescribe standards, even when they are to be set up for a special purpose with a particular population. And sometimes it may be necessary to rely on the judgements of acknowledged specialists regarding the worth and relative quality of a person's general professional activity. The very complexity of the physician's role makes it difficult to imagine a set of standards that could apply to all practitioners in all situations. Thus it is easy to understand why many studies and articles are confined to one dimension of that role or to the physician's job in relation to one or two diseases.

It is also easy to understand why many efforts in this direction depend upon subjective judgements of adequacy. To be sure, there are instances where objective criteria can be assessed--such as number of beds, possession and use of cardiology equipment, patient turnover--but in these cases one cannot be looking at the performance of the physician himself. Much of what the individual physician does is itself a matter of judgement, and that con-

siderably complicates the situation of setting precise standards of performance.

The second major problem is closely related to the first. There is at this time--so far as the literature reveals--no clearcut and universal definition of the physician's role or for that matter of the total job to be done (by variously trained persons) in providing needed and acceptable medical care. Without such a taxonomy of what needs to be accomplished, it is difficult to set up useful standards of how well it needs to be done. And of course times change, and thus priorities and emphases also vary. Several writers have realized this difficulty, and have consciously kept their concerns within a small, controllable scope. Others have tried to cover the whole domain of quality care in 6 or 8 global statements (with particular reference to the physician), but this leaves us with intentions, not definitions.

A third difficulty is the existence of differing sets of criteria with differing specific performance expectations. And this appears to vary in terms of philosophical stance. Some writers begin with the assumption that utilization of persons and facilities defines quality care; others stress patient outcomes as the ultimate indicators of adequate care. The majority of those sources considered in this review have dealt with physician performance in terms of patient-physician interaction of various sorts, with little or no reference to utilization or patient outcomes. Even within this last rubric there exist wide variations in both approach and product, as noted in the body of this report.

One might infer that there is disagreement or contention in the field regarding how to define the components of total and/or quality health care. This appears not to be the case; there do not seem to be schools of thought on the question. Rather, there is a lack of consensus, which results in a variety of definitions, a wide range of dimensions, and diverse degrees of specificity. Proponents are not arguing, in other words; they are either simply not agreeing or are unaware of one another's efforts and priorities.

In connection with these problems it may be useful to quote from one of the writers who has given much thought to quality medical care, its definition, and its measurement. Donabedian (31) writes...

> The assessment of quality must rest on a conceptual and operationalized definition of what the "quality of medical care" means. Many problems are present at this fundamental level, for the quality of care is a remarkably difficult notion to define. ...the definition of quality may be almost anything anyone wishes it to be, although it is, ordinarily, a reflection of values and goals current in the medical care system and in the larger society of which it is a part. (p. 167)

> ...most studies of quality suffer from having adopted too narrow a definition of quality. In general, they concern themselves with the technical management of illness and pay little attention to prevention, rehabilitation, coordination and continuity of care, or handling the patient-physician relationship. Presumably the reason for this is that the technical requirements of management are more widely recognized and better standardized. (p. 192)

> Also, certain goals in the medical care process may not be compatible with other goals, and one may not speak of quality in global terms but of quality in specified dimensions and for specified purposes. Assessments of quality will not, therefore, result in a summary judgement but in a complex profile, as Sheps has suggested. (p. 194)

In view of these observations, it appears prudent for any interested group to define its own purposes and set up its own definitions, before it proceeds to spell out specific criteria relating to the adequacy of medical care. At the same time, the literature does provide a number of clues concerning dimensions of medical practice by the individual physician...and the literature also provides numerous examples of nonspecific criteria--the sort which may profitably be avoided if any degree of objectivity or precision is desired.

In summary, the literature as a whole provides some clearcut guidelines along with a sense of an incomplete or variable methodology. For example, a number of dimensions of quality care have been either studied or espoused,

and probably deserve attention in any effort to describe and assess the performance of the general physician. Yet, from source to source the dimensions vary, and some persons suggest only global judgements in these domains as opposed to performance-specific assessments. Similarly, there is a dichotomy within the "clinical competence" dimension, whereby one approach is to specify and measure for the general handling of history-physical-treatment; and another is to outline and examine only by given disease.

As to methodology related to the statement of criteria, two observations are made. First, various approaches to the determination of performance have been utilized: observation, audit of records, audit of records plus interview, ratings, and questionnaires. Aside from these standard procedures little that is novel has been advanced other than the simulated patient-management test device. Second, criteria have been outlined by various means: by fiat, via the armchair approach based on general experience; by consensus within professional societies or ad hoc groups; by investigation of existing records for indications of variance and frequency; by determination of critical incidents or glaring needs which help to define the degree of specificity required; and by empirical tryout (and revision) with on-the-job practitioners.

The review has concentrated on the performance of the individual physician, and has dealt with a number of findings that may be helpful in the task of outlining performance criteria. It has made reference to an extensive and relatively recent literature which demonstrates the broad concern of the profession for both defining and assuring quality medical care. At the same time, the review has suggested a variety of cautions in approaching the problem of criterion-definition, and has made it clear that this is a developing inquiry rather than an accomplished one.

Bibliography and References

1. Abrahamson and Foster, "Specialty Board Certification - Defining Professional Roles." American Association of Medical Colleges Proceedings, 91-96, October, 1970.
2. "Allied Health Personnel: A Report on Their Use in the Military Services as a Model for Use in Nonmilitary Health-Care Programs." National Academy of Sciences, Washington, D. C., 1967.
3. Andrews, L. P., et al. "A Study of Patterns of Patient Referral to a Medical Clinic in a Rural State: Methodology." American Journal of Public Health, 49: 634-43, May, 1959.
4. Arbona, G., & Curt, J. N. "A Progress Report on Regionalization of Comprehensive Health Services in Puerto Rico." November, 1968.
5. Bailey, J. T. "The Critical Incident Technique in Identifying Behavioral Criteria of Professional Nursing Effectiveness." Nursing Research, 5: 52-64, October, 1956.
6. Bates, B., & Torkelson, L. O. "Two Methods of Improving Referral Information: A Comparative Study in a University Medical Center." Medical Care, 5: 418-22, November-December, 1967.
7. Beaumont, G., et al. "Medical Auditing in a Comprehensive Clinic Program." Journal of Medical Education, 42: 359-67, April, 1967.
8. Bellin, L. E., et al. "Policing Publicly Funded Health Care for Poor Quality, Overutilization, and Fraud—The New York City Medicaid Experience." American Journal of Public Health, 60: 811-20, May, 1970.
9. Bellin, L. E. "Realpolitik in the Health Care Arena: Standard Setting of Professional Services." American Journal of Public Health, 58: 820-25, May, 1968.

10. Bergman, A. B., et al. "Performance Analysis in Pediatric Practice: Preliminary Report." Journal of Medical Education, 42: 249-53, March, 1967.

11. Blumberg, M. S., & Drew, J. A. "Methods for Assessing Nursing Care Quality." Hospitals, 37: 72-80, November 1, 1963.

12. Bogdonoff, M. "Concern About Patient Care." Archives of Internal Medicine, 123: 719-21, June, 1969.

13. Brook, R. H., & Stevenson, R. L., Jr. "Effectiveness of Patient Care in an Emergency Room." The New England Journal of Medicine, 283: 904-7, October 22, 1970.

14. Brooke, R. "An Audit of the Quality of Care in Social Medicine." Milbank Memorial Fund Quarterly, 46: 351-76, July 1968, Part I.

15. Brown, M., et al. "A Retraining Program for Inactive Physicians." California Medicine, 111: 396-400, November, 1969.

16. Bunker, J. "Surgical Manpower. A Comparison of Operations and Surgeons in the United States and in England and Wales." The New England Journal of Medicine, 282: 135-43, January 15, 1970.

17. California Medical Association. Committee on the Role of Medicine in Society, "Responsibility for Quality in Health Care." California Medicine, 106: 486-90, June, 1967.

18. Cashman, J. W., & Myers, B. A. "Medicare: Standards of Service in a New Program - Licensure, Certification, Accreditation." American Journal of Public Health, 57: 1107-17, July, 1967.

19. Clute, K. F. The General Practitioner: A Study of Medical Education and Practice in Ontario and Nova Scotia. Toronto, University of Toronto Press, 1963.

20. Code, C. F. "Determinants of Medical Care: A Plan for the Future." The New England Journal of Medicine, 283: 679-85, September 24, 1970.

21. Cohen, W. J. "Current Problems in Health Care." The New England Journal of Medicine, 281: 193-97, July 24, 1969.

22. Collett, L. S., & Dohner, C. "Change in Attitude as an Index of Effectiveness for Short Courses in Continuing Medical Education." Journal of Medical Education, 45: 237-42, April, 1970.

23. Cordero, A. L. "The Determination of Medical Care Needs in Relation to a Concept of Minimal Adequate Care: An Evaluation of the Curative Outpatient Services of a Rural Health Centre." Medical Care, 2: 95-103, April-June, 1964.

24. Cowles, J. T. "A Critical-Comments Approach to the Rating of Medical Students' Clinical Performance." Journal of Medical Education, 40: 188-98, February, 1965.

25. Cowles, J., & Kubany, A. J. "Improving the Measurement of Clinical Performance of Medical Students." Journal of Clinical Psychology, 15: 139-43, April, 1959.

26. Creditor, M. C. "If the Doctors Owned the Hospitals." The New England Journal of Medicine, 284: 134-38, January 21, 1971.

27. Cronkhite, L. W., Jr., et al. "The Health-Care System for Massachusetts." New England Journal of Medicine, 284: 240-43, February 4, 1971.

28. Curry, F. J. "Neighborhood Clinics for More Effective Outpatient Treatment of Tuberculosis." New England Journal of Medicine, 279: 1262-67, December 5, 1968.

29. Daily, E. F., & Morehead, M. A. "A Method of Evaluating and Improving the Quality of Medical Care." American Journal of Public Health, 46: 848-54, July, 1956.

30. Daily, E. F. "The Health Insurance Plan. New York City Welfare Department Project." American Journal of Public Health, 53: 1353-60, September, 1963.

31. Donabedian, A. "Evaluating the Quality of Medical Care." Milbank Memorial Fund Quarterly, 44: 166-203, 1966.

32. Deckert, G. H., & Schneider, J. "The Effect of Training and Belief in Personal Control on Behavioral Observations by Medical Students." Unpublished paper, 1970.

33. Eagle, J. F. "Quality of Medical Care: A Problem." Journal of Pediatrics, 63: 1151-57, December, 1963.

34. Eisele, C. W. "The Medical Audit in Continuing Education." Journal of Medical Education, 44: 263-65, April, 1969.

35. Eisele, C. W., ed. The Medical Staff in the Modern Hospital. McGraw-Hill, Inc., 1967.

36. Eistein, A. S., et al. "Methods for the Study of Medical Inquiry," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 167-72, October, 1970.

37. Ellis, J. R. "Preventive Medicine in Medical Education." The New England Journal of Medicine, 273: 792-98, October 7, 1965.

38. Fagel, B. G. "SAMA Project for Medical Education and Community Orientation," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 27-29, October, 1970.

39. Falk, I. S., et al. "The Development of Standards for the Audit and Planning of Medical Care 1. Concepts, Research Design, and the Content of Primary Physicians' Care." American Journal of Public Health, 57: 1118-36, July, 1967.

40. Feinstein, A. R. "Clinical Epidemiology I: The Populational Experiments of Nature and of Man in Human Illness." Annals of Internal Medicine, 69: 807-20, October, 1968.

41. Feinstein, A. R. "Clinical Epidemiology II: The Identification Rates of Disease." Annals of Internal Medicine, 69: 1037-61, November, 1968.

42. Feinstein, A. R. "Clinical Epidemiology III: The Clinical Design of Statistics in Therapy." Annals of Internal Medicine, 69: 1287-1312, December, 1968.

43. Firstbrook, J. B. "The Evaluation of Physician Performance." Assoc. of Canadian Medical Colleges Newsletter, II: 1-7, August, 1969.

44. Ford, A., et al. "The Academic Physician and Medical Practice." Journal of Medical Education, 41: 215-221, March, 1966.

45. Foster, J., & Lass, S. "The Identification of Interaction Patterns in Student-Patient Communications," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 155-60, October, 1970.

46. Froelich, R. E. "Q-Sort Methodology Applied to Educational Goals," in Complete Papers, Ninth Annual Conference on Research in Medical Education, 17-20, October, 1970.

47. Fuchs, V. "Can the Traditional Practice of Medicine Survive?" Archives of Internal Medicine, 125: 154-56, January, 1970.

48. Glaser, W. "Evaluation of Performance in Public Health Nursing." Nursing Research, 10: 32-37, Winter, 1961.

49. Greenes, R. A., et al. "Recording, Retrieval and Review of Medical Data by Physician-Computer Interaction." The New England Journal of Medicine, 282: 307-15, February 5, 1970.

50. Haggerty, R. J. "The University and Primary Medical Care." The New England Journal of Medicine, 281: 416-22, August 21, 1969.

51. Hagner, S. B., et al. "Patient Outcome in a Comprehensive Medicine Clinic: Its Retrospective Assessment and Related Variables." Medical Care, 6: 144-56, March-April, 1968.

52. Haley, H. B., Jr., et al. "Factor-Analytic Approach to Attitude Scale Construction." Journal of Medical Education, 43: 331-36, March, 1968.

53. Halsted, J. A. "Personal Care in Medicine of the Future." The New England Journal of Medicine, 267: 1233-37, December 13, 1962.

54. Hawley, P. "Evaluation of the Quality of Patient Care." American Journal of Public Health, 45: 1533-37, December, 1955.

55. Hayes, D. M., et al. "Preparation of Medical Students for Patient Interviewing Report on an Experimental Course for First Year Medical Students," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 149-54, October, 1970.

56. Health and Medical Care in New York City. A Report by the Committee for the Special Research Project in the Health Insurance Plan of Greater New York. Harvard University Press, 1957.

57. "Health Insurance for the Aged." State Operations Manual Revision, No. 49, 641 pp., July, 1970.

58. Helfer, R. E. "Estimating the Quality of Patient Care in a Pediatric Emergency Room." Journal of Medical Education, 42: 244-48, March, 1967.

59. Hess, J. W. "A Comparison of Methods for Evaluating Medical Student Skill in Relating to Patients." Journal of Medical Education, 44: 934-38, October, 1969.

60. Hess, J. W., et al. "New Philosophies in Medical Education: Their Effect on Recognition of Competence." Journal of the American Medical Association, 213: 1009-12, August 10, 1970.

61. Higgins, A. C. "Social Factors Affecting the Quality of Medical Records." Journal of Medical Education, 43: 1049-54, October, 1968.

62. Himler, G. "What Studies on the Quality of Medical Care Should Do for Health Insurance." New York Medicine, 19: 375-82, June 5, 1963.

63. Hinz, C. F., Jr. "Direct Observation as a Means of Teaching and Evaluating Clinical Skills." Journal of Medical Education, 41: 150-61, February, 1966.

64. Hollifield, G., et al. "A Method of Evaluating Student-Patient Interviews." Journal of Medical Education, 32: 853-58, December, 1957.

65. Hubbard, J. P., et al. "An Objective Evaluation of Clinical Competence." The New England Journal of Medicine, 272: 1321-28, June 24, 1965.

66. Hubbard, J. P. "Programmed Testing in the Examinations of the National Board of Medical Examiners," in Testing Problems in Perspective, Anne Anastasi (ed.), American Council on Education, Washington, D. C.: 195-207, 1966.

67. Huntley, R., et al. "The Quality of Medical Care: Techniques and Investigation in the Outpatient Clinic." Journal of Chronic Diseases, 14: 630-42, December, 1961.

68. Jason, H. "Sequential Examinations in Assessing the Impact of a New Medical Curriculum." Journal of Medical Education, 41: 18-24, July, 1966, Part 2.

69. Jones, R., & Taxay, E. "Methodology and Effectiveness of a Program of Postgraduate Education for Cuban Physicians." Journal of Medical Education, 38: 949-60, November, 1963.

70. Jungfer, C. C., & Last, J. M. "Clinical Performance in Australian General Practice." Medical Care, 2: 71-83, April-June, 1964.

71. Kagan, N., et al. "A Theory of Medical Inquiry," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 173-78, October, 1970.

72. Kane, R. L., & Kane, R. A. "Physicians' Attitudes of Omnipotence in a University Hospital." Journal of Medical Education, 44: 684-89, August, 1969.

73. Klapper, M. I. "The Mist Program." Unpublished Paper, 1970.

74. Knowles, J. H. "The Quantity and Quality of Medical Manpower: A Review of Medicine's Current Efforts." Journal of Medical Education, 44: 81-118, February, 1969.

75. Kroeger, H. H., et al. "The Office Practice of Internists: I. The Feasibility of Evaluating Quality of Care." Journal of the American Medical Association, 193: 371-76, August 2, 1965.

76. Lembcke, P. A. "Evolution of the Medical Audit." Journal of the American Medical Association, 199: 543-50, February 20, 1967.

77. Lembcke, P. A. "Medical Auditing by Scientific Methods: Illustrated by Major Female Pelvic Surgery." Journal of the American Medical Association, 162: 646-55, October 13, 1956.

78. Lewis, C. E., et al. "Activities, Events and Outcomes in Ambulatory Patient Care." The New England Journal of Medicine, 280: 645-49, March 20, 1969.

79. Lewis, C. E., & Hassanein, R. "Continuing Medical Education - An Epidemiologic Evaluation." The New England Journal of Medicine. 282: 254-59, January 29, 1970.

80. Lohrenz, F. N. "The Marshfield Clinic Physician-Assistant Concept: Critical Evaluation of Advantages, Disadvantages and Prospects." The New England Journal of Medicine, 284: 301-4, February 11, 1971.

81. Long, L. "The Evaluation of Continuing Education Efforts." American Journal of Public Health, 59: 967-73, June, 1969.

82. Loupe, M. J., et al. "An Experimental Study of Diagnostic Thinking," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 179-84, October, 1970.

83. Massachusetts Medical Society. "Committee on Maternal Welfare: Minimum Standards of Obstetric Care." The New England Journal of Medicine, 252: 739-40, April 28, 1955.

84. Matson, D. D. "An In-Training Evaluation of Residency Training Programs and Trainees." Journal of Medical Education, 41: 47-51, July, 1966, Part 2.

85. McCarthy, W. H., & Gonnella, J. S. "The Simulated Patient Management Problem: A Technique for Evaluating and Teaching Clinical Competence." British Journal of Medical Education, I: 348-52, 1967.

86. McGuire, C. H. "An Evaluation Model for Professional Education - Medical Education." Proceedings of the 1967 Invitational Conference on Testing Problems, Educational Testing Service, 37-54, 1968.

87. McGuire, C. H., & Levine, H. G. "Use of Role-Playing to Evaluate Affective Skills in Medicine." Journal of Medical Education, 45:700-705, September, 1970.

88. Medical and Hospital Care in Puerto Rico: A Report submitted to the Governor & the Legislature of the Commonwealth of Puerto Rico by the School of Public Health and Administrative Medicine, Columbia University, and the Department of Health of Puerto Rico, February, 1962.

89. "Medical Care Appraisal and Quality Assurance in the Office of Internal Medicine (A Progress Report)." American Society of Internal Medicine, December, 1970; also Progress Reports June 1971 and June 1972.

90. Medical Review Manual. Medical Review Committee, Medical Society of the State of New York, December, 1969.

91. Morehead, M. A. "Evaluating Quality of Medical Care in the Neighborhood Health Center Program of the Office of Economic Opportunity." Medical Care, 8: 118-31, March-April, 1970.

92. Morehead, M. A. "The Medical Audit as an Operational Tool." American Journal of Public Health, 57: 1643-56, September, 1967.

93. Parlette, N. "Evaluation of Continuing Education." American Journal of Public Health, 60: 316-21, February, 1970.

94. Payne, B. C. "Function of the Audit Committee in the General Hospital." Hospitals, 37: 62-73, December 1, 1963.

95. Payne, B. C. "Continued Evolution of a System of Medical Care Appraisal." Journal of the American Medical Association, 201: 536-40, August 14, 1967.

96. Peterson, O. L., et al. "An Analytical Study of North Carolina General Practice, 1953-54." Journal of Medical Education, 31: 1-165, December, 1956, Part 2.

97. Peterson, O. L. "Attributes of Lifelong Competence in Medical Practice." Journal of the American Medical Association, 198: 765-66, November 14, 1966.

98. Peterson, O. L. "Medical Care: Its Social and Organizational Aspects (Evaluation of the Quality of Medical Care)." The New England Journal of Medicine, 269: 1238-45, December 5, 1963.

99. Peterson, O. L., et al. "A Study of Diagnostic Performance: A Preliminary Report." Journal of Medical Education, 41: 797-803, August, 1966.

100. Plaja, A. O., et al. "Communication between Physicians and Patients in Outpatient Clinics: Social and Cultural Factors." Milbank Memorial Fund Quarterly, 46: 161-21, April, 1968, Part 1.

101. Price, P. B. "A Search for Excellence." American Journal of Surgery, 118: 815-21, December, 1969.

102. Price, P. B., et al. "Measurement of Physician Performance." Journal of Medical Education, 39: 203-11, February, 1964.

103. Querido, A. The Efficiency of Medical Care: A Critical Discussion of Measuring Procedures. H. E. Stenfert Kroese, Leiden, 1963.

104. Rimoldi, H. J. A. "Rationale and Applications of the Test of Diagnostic Skills." Journal of Medical Education, 38: 364-68, May, 1963.

105. Rosenfeld, L. S. "Quality of Medical Care in Hospitals." American Journal of Public Health, 47: 856-65, July, 1957.

106. Rothman, A. I. "A Pediatrics Clerkship: Its Effect on Student Attitudes Related to Pediatrics," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 255-60, October, 1970.

107. Rutstein, D. D. "Another Look at the Patient." The New England Journal of Medicine, 267: 338-42, August 16, 1962.

108. Sanazaro, P. J., & Williamson, J. W. "A Classification of Physician Performance in Internal Medicine." Journal of Medical Education, 43: 389-97, March, 1968.

109. Sanazaro, P. J. "A New Generation of Options for Academic Health Centers." Journal of Medical Education, 46: 11-17, January, 1971.

110. Sanazaro, P. J., & Williamson, J. W. "Physician Performance and Its Effects on Patients: A Classification Based on Reports by Internists, Surgeons, Pediatricians, and Obstetricians." Medical Care, 8: 299-308, July-August, 1970.

111. Science News Editorial, "Peer Reviews." Science News, 524, December 6, 1969.

112. Seipp, C. "Puerto Rico: A Social Laboratory." The Lancet, 1364-68, June 22, 1963.

113. Sheps, M. C. "Approaches to the Quality of Hospital Care." Public Health Reports, 70: 877-86, September, 1955.

114. Sidel, V. "Evaluation of the Quality of Medical Practice." Journal of the American Medical Association, 198: 763-64, November 14, 1966.

115. Sniderman, A. D., & Scott, H. M. "Clinical Competence in Medical Residents - Its Evaluation by Role Definition and Patient Record Modification," in Complete Papers: Ninth Annual Conference on Research in Medical Education, 161-66, October, 1970.

116. Strassman, H. D., et al. "An Attitudinal Objective: Its Measurement Through the Use of Taxonomy II." Journal of Medical Education, 42: 201-6, March, 1967.

117. Taxay, E. P. "The Refugee Cuban Physician: A Final Report on the Miami Program." Journal of Medical Education, 41: 20-27, January, 1966.

118. Taylor, C. W., et al. "Syntheses of Multiple Criteria of Physician Performance." Journal of Medical Education, 44: 1063-69, November, 1969

119. Trussell, R. E. "The Quality of Medical Care as a Challenge to Public Health." American Journal of Public Health, 55: 173-82, February, 1965.

120. Tumulty, P. A. "What Is a Clinician and What Does He Do?" The New England Journal of Medicine, 283: 20-24, July 2, 1970.

121. Vida, F., et al. "Gaps in Doctor-Patient Communication." The New England Journal of Medicine, 280: 535-40, March 6, 1969.

122. Watson, K. A. "The Evaluation of Practices in Preventive and Curative Medicine Through Medical Records and Special Study." Doctoral Dissertation, University of California, Berkeley, 1967.

123. Weed, L. L. "Medical Records That Guide and Teach." The New England Journal of Medicine, 278: 593-600, 652-57, (March 14, 21) 1968.

124. Weitman, M., & Coisman, F. G. "Medical Student Pathways to Diagnosis." Journal of Medical Education, 40: 166-79, February, 1965.

125. Willard, W. R. "The Primary Physician." Journal of Medical Education, 44: 119-25, February, 1969.

126. Williams, G. "Needed: A New Strategy for Health Promotion." The New England Journal of Medicine, 279: 1031-35, November 7, 1968.

127. Williamson, J. W. "Assessing Clinical Judgment." Journal of Medical Education, 40: 180-87, February, 1965.

128. Williamson, J. W., et al. "Continuing Education and Patient Care Research." Journal of the American Medical Association, 201: 938-42, September 18, 1967.

129. Williamson, J. W., et al. "Priorities in Patient-Care Research and Continuing Medical Education." Journal of the American Medical Association, 204: 303-8, April 22, 1968.

130. Wolfe, S. "Talking with Doctors in Urbanville: An Exploratory Study of Canadian General Practitioners." American Journal of Public Health, 53: 631-44, April, 1963.

131. "Young M. D.'s Found Most Successful." U. S. Medicine-Prescription Report, 2; December 1, 1970.

APPENDIX A

Hinz Observation Form

A. Content of present illness

1. introduced self, explained procedure
2. elicited chief complaint
3. elicited major symptoms: character and severity, location, relation to other symptoms, onset, course & duration
4. exacerbations and remissions
5. etiologic factors
6. prior medical care and results of therapy
7. elicited pertinent negatives to rule out other syndromes

B. Techniques of Eliciting History

1. encouraged patient to talk freely
2. controlled the interview
3. held to a logical sequence
4. followed leads offered by patient
5. checked story by summarizing, questioning
6. avoided repetition
7. used understandable language
8. recorded data during interview
9. posed questions without suggesting answers
10. determined patient's interpretation of symptoms
11. showed consideration
12. avoided intruding his own feelings
13. inquired about emotional aspects, and followed leads

C. Routine History

Did logical and appropriate systems review: past history, family history, personal history, occupational history, environmental history

D. Physical Examination

1. performed exam systematically
2. obtained vital signs
3. used appropriately detailed exam
4. showed dexterity with hands and instruments
5. included all pertinent parts of exam
6. explained procedures
7. adapted history and physical to present circumstances
8. was courteous and gentle

E. Oral Presentation of Case

1. precise and logical
2. selected positive and negative pertinent facts
3. considered signs and symptoms in terms of disease process
4. arrived at logical tentative diagnosis for right reasons
5. considered other logical possible diagnosis
6. undertook diagnostic and therapeutic principles for future management of patient

APPENDIX B

Taxonomy of Clinical Performance
(Hubbard et al.)

I History:
- Obtain information from patient
- Obtain information from other sources
- Use judgement

II Physical Examination
- Perform thorough exam
- Note manifest signs
- Use appropriate techniques

III Test & Procedures
- Utilize appropriate tests
- Apply methods correctly
- Modify tests to meet needs
- Interpret test results

IV Diagnostic Acumen
- Recognize causes
- Explore conditions thoroughly
- Arrive at reasonable differential diagnoses

V Treatment
- Institute the appropriate treatment
- Decide immediacy of needs for therapy
- Judge appropriate extent of treatment

VI Judgement & skill in Implementing Care
- Make necessary preparations
- Use correct methods and procedures
- Perform manual techniques properly
- Adapt method to special procedures

VII Continuing Care
- Follow the patient's progress
- Modify treatment
- Plan effective follow-up care

VIII Physician-Patient Relation
- Establish rapport with patient
- Relieve tensions
- Improve patient cooperation

IX Responsibilities as Physician for: welfare of patient, hospital, health of community, & medical profession

Taxonomy of Medical Care
(Sanazaro and Williamson 1970)

GENERAL CARE

Use of facilities	-Hospitalizing or transferring patient; use of specialized equipment
Consultation	-Use of consultants for diagnosis and/or treatment; use of advice offered by consultants
Professional manner	-Establishing or maintaining rapport; physician behavior/attitudes in dealing with patient
Physician availability	-Willingness to see patient; making house calls, responding to calls from nurse, hospital, patient; seeing patient personally; attending patient; providing for coverage
Professional responsibility	-Continuing education; keeping up with the literature; matters of ethics, interprofessional relationships, and attitudes toward medicine
Follow-Up	-Arranging, assuring, scheduling follow-up care; making effort to do same; attitude toward providing such care
Use of health team	-Coordinating services of other physicians, nurses, auxiliary workers; promoting, facilitating communication among professionals

EVALUATION: GENERAL

Arriving at diagnosis	-Making or considering diagnosis, differential diagnosis, awareness or recognition of causes, conditions, diagnoses
Arriving at plan of treatment	-Deciding upon a plan of treatment; for example, to use drugs, surgery, dialysis, etc.
Review of problem	-Review of records, reevaluation, reexamination, reinvestigation; discussing problem with patient's previous physicians
Review of treatment	-Reassessment of regimen
Other	-Evaluation; work-up; investigation of problem

EVALUATION: SPECIFIC

History	-All actions that pertain to eliciting, recording, verifying, interpreting complete history; use of history; attitudes toward history-taking
Physical examination	-Performing complete physical examination; acts of noting, discovering, finding; attitudes toward; techniques
Use of instruments	-Use of instruments for examining patient: Ophthalmoscope, otoscope, stethoscope, anuscope, proctoscope
Psychologic perception	-Recognition of patient's special psychologic or social needs, attitudes, beliefs, "unspoken" complaints
Laboratory	-Use of laboratory, as in ordering tests, and use of results; reliance; selectivity
X-ray	-Use of radiologic techniques, interpretation or use of interpretations of x-rays
EKG	-Same as for x-ray
Diagnostic procedures	-Biopsy, Papanicolaou smears, lumbar puncture, thoracentesis

TREATMENT: GENERAL

Revising treatment	-Revising of therapeutic program; judgement; attitude

TREATMENT: SPECIFIC

Diet	-Diet as the modality of treatment
Prescription of activity	-Specific advice to increase, limit, modify, regulate activity
Patient education	-Instructing, educating; explaining; preparing patients. Primary purpose is increased patient knowledge and understanding of condition of regimen
Psychologic support	-Reassuring; alleviating concern; expressing interest in patient, family. Goal is improved emotional state
Use of community resources	-Use of special agencies, community health facilities, family services, child guidance, visiting nurse association, etc.
Drugs, biologicals, electrolytes, fluids	-Administering; prescribing; knowledge of dose; awareness of side effects
Procedure	-Nonsurgical procedure used in treatment, e.g., removal of foreign body from trachea or body cavity, phlebotomy, local injection
Physical modality	-Cardiac resuscitation; dialysis, artificial respiration; physical therapy
Radiation/Electrical	-Use of x-ray therapy in any form; other wave therapy; cardiac defibrillation
Cesarean section/delivery	-Decision-making and technique
Surgical treatment	-Immediate preoperative, intra-operative, and postoperative treatment; surgical technique; planning, judgement, decision-making

Committee on Maternal Welfare
Massachusetts Medical Society

"Minimum Standards of Obstetric Care" (1954)

PRENATAL CARE

Blood pressure, weight and urinary albumin must be recorded at every visit.

Hemoglobin must be recorded at the first visit, and repeated at least in the seventh month on all patients. In those requiring treatment for anemia it must be repeated again and again.

Blood must be tested for syphilis and for blood grouping and RH factor at the first visit.

Visits must be required of all patients at least monthly in the first six months, every two weeks during the seventh and eighth months and every week in the ninth month of pregnancy; in case of complications, especially toxemia, weekly visits begin earlier (often, patients must be seen two or three times in a week).

History must be obtained at first visit regarding previous pregnancies menstruation (including date of last menstrual period and a carefully estimated date of confinement) and nephritis or any kidney ailment, hypertension, diabetes, scarlet fever, rheumatic fever or any form of heart disease.

Measurements of the pelvis must be made, including at least the diagonal conjugate and a realistic appraisal of the outlet.

Heart, abdomen and pelvis must also be carefully examined, and the urine for sugar.

INTRA-PARTUM AND POST-PARTUM CARE

On Admission

The nurse must note the length of gestation, temperature, pulse and respirations, blood pressure and fetal heart rate and immediately report if any is abnormal. In active labor, determination of the blood pressure and pulse is repeated at least hourly.

The activity of labor, presence and amount of bloody show and state of membranes must be recorded.

The time of last meal or fluid must be called to the attention of the doctor.

Anesthetic

The anesthetic must be given only by a qualified person and never by the circulating nurse.

Inhalation anesthetic must never be used unless the patient's stomach is empty. Spinal or caudal anesthetic must be given only by a doctor familiar with its risks who will take time to stabilize the patient before proceeding. (Stabilization refers particularly to a fall in blood pressure that can be corrected with pressor drugs and to the level of anesthesia, which must not ascend above the costal margin.)

The anesthetist must be in constant personal attendance at the patient's head throughout the entire obstetric or surgical procedure and is responsible for her further care until she has recovered from anesthesia.

Delivery

The absolute minimum personnel includes obstetrician, anesthetist and circulating nurse. Added nursing personnel should be within a moment's call for unforeseen emergencies.

Delivery through an undilated cervix is extremely dangerous. High-forceps delivery is not justified today. Excessive fundal pressure is dangerous.

A consultant or assistant should be called in cases entailing more than low-forceps delivery.

Asepsis must be surgically strict. Masks must cover noses.

Excessive Crede maneuver is dangerous.

Post Partum (the hazard of hemorrhage is highest now)

Even if oxytocics are used for the third stage it is imperative to guard the fundus immediately after delivery of the baby until forty-five minutes after expulsion of the placenta (this means holding the fundus through the abdomen between two hands, presumably by a nurse).

Cross matching of blood is started immediately if post-partum bleeding exceeds more than a slight trickle.

If in doubt the attendant should start the transfusion and call for help.

Ample supplies of compatible blood must be readily available in the hospital, preferably on the delivery floor, twenty-four hours a day.

The vagina should never be packed for bleeding from above.

The cervix is explored visually, and the vagina manually, for lacerations if bleeding occurs.

If bleeding persists immediate assistance is essential.

APPENDIX E

Medical Care Appraisal and Quality Assurance
in the Office Practice of Internal Medicine
(A.S.I.M. 1971)

GENERAL INFORMATION

Please PRINT all additions and corrections

1. Code No. (state, physician, case number)
2. Sex
3. Age (decades)
4. Race
5. Patient came voluntarily
6. Referred by non-MD
7. Referred by MD
8. Case was handled over the phone
9. Case was an office visit
10. The disease category constituted the primary diagnosis
11. Time required to complete this phase of care
    a. Not less than _____ days
    b. Average of _____ days
    c. Not more than _____ days
12. Time required to grant the patient an appointment

CRITERIA FOR QUALITY CARE

I. Criteria for the Diagnosis and Institution of Management of Newly Discovered Diabetes (Mature Onset Adult)

A. History: Specific reference to:

Score:

_____ 1. Weight change
_____ 2. Visual symptoms
_____ 3. Paresthesia
_____ 4. Pruritus
_____ 5. Family history of diabetes
_____ 6. Obstetrical history
_____ 7. Infection - skin or other location
_____ 8. Fatigue
_____ 9. Coronary insufficiency
_____ 10. Polyuria
_____ 11. Polydipsia
_____ 12. Previous investigation for diabetes
_____ 13. History of pancreatitis
_____ 14. History of excessive intake of alcohol
_____ 15. Nocturnal diarrhea
_____ 16. Sexual problems
_____ 17. Recent physical stress
_____ 18. Recent emotional stress
_____ 19. Medications
_____ 20. Dietary habits
_____ 21. Other endocrine disease

B. Physical Examination: Specific reference to:

Score: _____
_____ 1. Eyes
_____ a. Cornea
_____ b. Lens
_____ c. Funduscopic
_____ d. Visual acuity
_____ 2. Cardiovascular
_____ a. Heart
_____ b. Blood pressure
_____ c. Peripheral pulses
_____ 3. Skin
_____ a. Trophic changes
_____ b. Pigment distribution
_____ c. Lipid deposits
_____ 4. Chest examination
_____ 5. Abdominal examination
_____ 6. Physical measurements
_____ a. Weight
_____ b. Height
_____ 7. Neurologic examination
_____ a. Deep tendon reflexes
_____ b. Sensory
_____ c. Cranial nerves
_____ d. Pathologic reflexes
_____ e. Vibratory senses
_____ 8. General appearance with comment regarding weight

C. Laboratory:

Score: _____
_____ 1. Complete blood count
_____ 2. Urinalysis
_____ a. Chemistries
_____ b. Microscopic
_____ 3. Fasting blood sugar
_____ 4. Post-prandial blood sugar
_____ 5. Glucose tolerance test
_____ 6. Random blood sugar
_____ 7. Blood urea nitrogen or creatinine
_____ 8. Cholesterol
_____ 9. Uric acid
_____ 10. Lipoprotein determination
_____ 11. Liver profile
_____ 12. Thyroid tests
_____ 13. Urine culture
_____ 14. Triglycerides

D. Radiology:

Score: _____ 1. Chest x-ray
_____ 2. X-ray of abdomen

E. Special Procedures:

Score: _____ 1. Electrocardiogram
_____ 2. Tuberculin test
_____ 3. Ocular tension
_____ 4. Ophthalmology consultation

F. Therapy:

Score: _____ 1. Dietary instruction
_____ 2. Type of diet
_____ a. Weighed or measured
(American Diabetic Association Diet or similar)
_____ b. Free
_____ c. Avoidance of sugar only
_____ d. Weight reduction
_____ 3. Instruction in urine testing
_____ 4. Instruction in administration of insulin
_____ 5. Instruction in management of insulin reactions
_____ 6. Instruction in care during other acute illness
_____ 7. Type of treatment
_____ a. Diet alone
_____ b. Diet and insulin
_____ c. Diet and oral agent
_____ d. None
_____ 8. Referral for care
_____ 9. Explanation of
_____ a. Disease
_____ b. Need for diet
_____ c. Need for treatment
_____ d. Need for follow-up
_____ e. Need for weight control
_____ 10. Were paramedical personnel used for
_____ a. Dietary instruction
_____ b. Urine testing instruction
_____ c. Insulin administration instruction
_____ d. Explanation of disease
_____ 11. Explanation of complications
_____ a. Short term
_____ b. Long term